WHAT IS CLAIMED IS:

Sub Cl.1
Cont

1.   A stereo matching apparatus comprising:

a stereo camera system for taking pictures of a predetermined area and producing first and second images of

5   the predetermined area;

a memory for storing first image data within a reference pixel region in the first image and second image data on a horizontal line in the second image, the horizontal line being corresponding to a vertical position of the reference pixel

10   region in the first image;

an address generator for setting a search range for a stereo matching and instructing to read out from said memory a part of the second image data which is within the search range and the first image data within the reference pixel region; and

15   a stereo matching unit for identifying a correlated destination of the reference pixel region by the stereo matching based on the part of the second image data which is within the search range and the first image data within the reference pixel region which are read out from said memory and calculating a

20   parallax of the reference pixel region based on the correlated destination of the reference pixel region,

wherein said address generator corrects a location of the search range for the reference pixel region based on the amount of deviation of an infinite distance corresponding point with

25   respect to a horizontal position of the reference pixel region.

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2.   The stereo matching apparatus as recited in claim 1, wherein said address generator shifts the location of the search range in the same direction as a direction of the deviation of the infinite distance corresponding point with respect to the horizontal position of the reference pixel region.

3.   The stereo matching apparatus as recited in claim 2, wherein said address generator shifts a starting point of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point.

4.   The stereo matching apparatus as recited in claim 2, wherein said address generator shifts an end point of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point.

5.   The stereo matching apparatus as recited in claim 1, wherein said address generator identifies the amount of correction of the search range in relation to the amount of deviation of the infinite distance corresponding point.

`6.   The stereo matching apparatus as recited in claim 2, wherein said address generator identifies the amount of correction of the search range in relation to the amount of

deviation of the infinite distance corresponding point.

7.   The stereo matching apparatus as recited in claim 3, wherein said address generator identifies the amount of correction of the search range in relation to the amount of deviation of the infinite distance corresponding point.

8.   The stereo matching apparatus as recited in claim 4, wherein said address generator identifies the amount of correction of the search range in relation to the amount of deviation of the infinite distance corresponding point.

9.   The stereo matching apparatus as recited in claim 2, further comprising:

a correction value memory for storing a correction value for correcting the location of the search range in relation to a location of the reference pixel region in the first image;

wherein said address generator sets the location of the search range for the reference pixel region based on the location of the reference pixel region and the correction value stored in said correction value memory for said location of the reference pixel region.

10.   The stereo matching apparatus as recited in claim 3, further comprising:

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a correction value memory for storing a correction value for correcting the location of the search range in relation to a location of the reference pixel region in the first image;

wherein said address generator sets the starting point of the search range for the reference pixel region based on the location of the reference pixel region and the correction value stored in said correction value memory for said location of the reference pixel region.

11. The stereo matching apparatus as recited in claim 1, wherein said stereo camera system comprises a pair of stereo cameras mounted on a vehicle, the pair of stereo cameras taking pictures of scenes outside of the vehicle, and said stereo matching unit calculates a distance to an object outside the vehicle on the basis of the parallax of the reference pixel region.

12. A stereo matching method comprising:

taking pictures of a predetermined area and producing first and second images of the predetermined area;

identifying a reference pixel region in the first image;

identifying a search range for the reference pixel region in the second image;

correcting a location of the search range for the reference pixel region based on the amount of deviation of an infinite

distance corresponding point with respect to a horizontal position of the reference pixel region; and

identifying a correlated destination of the reference pixel region by searching through the search range.

13.   The stereo matching method as recited in claim 12, wherein said step of correcting the location of the search range shifts the location of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point with respect to the horizontal position of the reference pixel region.

14.   The stereo matching method as recited in claim 13, wherein said step of correcting the location of the search range shifts a starting point of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point with respect to the horizontal position of the reference pixel region.

15.   The stereo matching method as recited in claim 13, wherein said step of correcting the location of the search range shifts an end point of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point with respect to the horizontal position of the reference pixel region.

16.   The stereo matching method as recited in claim 12, wherein said step of correcting the location of the search range corrects the location of the search range with a correction value corresponding to the deviation of the infinite distance corresponding point.

17.   The stereo matching method as recited in claim 13, wherein said step of correcting the location of the search range corrects the location of the search range with a correction value corresponding to the deviation of the infinite distance corresponding point.

18.   The stereo matching method as recited in 14, wherein said step of correcting the location of the search range corrects the location of the search range with a correction value corresponding to the deviation of the infinite distance corresponding point.

19.   The stereo matching method as recited in 15, wherein said step of correcting the location of the search range corrects the location of the search range with a correction value corresponding to the deviation of the infinite distance corresponding point.

20.   The stereo matching method as recited in claim 12, further comprising:

calculating a distance to an object outside a vehicle on the basis of the correlated destination of the reference pixel region,

wherein said step of taking pictures of the predetermined area takes pictures of scenes outside of the vehicle.

21.   The stereo matching method as recited in claim 12, further comprising:

taking picture of a screen by a pair of stereo cameras and producing third and fourth images of the screen, said screen being drawn a first vertical line and a second vertical line at an interval equal to a baseline of the stereo cameras;

identifying a deviation of a position of the second vertical line shown on the fourth image with respect to a position of the first vertical line shown on the third image; and

calculating an infinite distance corresponding point corresponding to each position on the first vertical line shown on the third image on the basis of the deviation of the position of the second vertical line,

wherein said step of correcting the location of the search range uses the infinite distance corresponding point thus calculated as the infinite distance corresponding point corresponding to the horizontal position of the reference pixel

region.

22.   A method of calculating an infinite distance corresponding point, the method comprising:

taking picture of a screen by a pair of stereo cameras and producing first and second images of the screen, said screen being drawn a first vertical line and a second vertical line at an interval equal to a baseline of the stereo cameras;

identifying a deviation of a position of the second vertical line shown on the second image with respect to a position of the first vertical line shown on the first image; and

calculating an infinite distance corresponding point corresponding to each position on the first vertical line shown on the first image on the basis of the deviation of the position of the second vertical line.

23.   A stereo matching apparatus comprising:

a stereo camera system for taking pictures of a predetermined area and producing first and second images of the predetermined area;

a reference pixel region identifying unit for identifying a reference pixel region in the first image;

a search range identifying unit for identifying a search range for the reference pixel region in the second image;

a correction unit for correcting a location of the search

range for the reference pixel region based on the amount of deviation of an infinite distance corresponding point with respect to a horizontal position of the reference pixel region; and

a correlated destination identifying unit for identifying a correlated destination of the reference pixel region by searching through the search range.